

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-15 (cancelled).

16. (New) A method for operating an injection system of an internal combustion engine having at least one injection actuator controllable by means of triggering pulses sensing and temporarily storing at least one state variable;

triggering the at least one injection actuator with a triggering pulse of definable pulse duration and definable initial pulse height;

during the triggering of the at least one injection actuator, performing an injection detection; incrementing the pulse height of the triggering pulse, at the defined pulse duration, until the injection is detected; and

when the injection is detected, permanently storing the pulse height of the triggering pulse causing the injection as a function of the sensed state variable;

wherein in future operation of the injection system, the sensor state variable is taken as a basis for triggering the at least one injection actuator.

17. (New) The method as recited in claim 16, wherein the pulse height of the triggering pulse causing an injection is permanently stored as a function of the sensed state variable of the injection system only if the state variable varies, in a time interval considered, only within a definable variability.

18. (New) The method as recited in claim 16, wherein the initial pulse height of the triggering pulse is selected so that no injection yet occurs at the instantaneous value of the state variable.

19. (New) The method as recited in claim 16, wherein the steps are performed for at least two different values of the state variable, and respectively resulting pulse heights of the triggering pulse causing an injection are permanently stored as a function of the respective value of the state variable in a table, a characteristics diagram, or a characteristic curve, and the table or

characteristics diagram or characteristic curve is taken as the basis, in future operation of the injection system, for triggering the at least one injection actuator.

20. (New) The method as recited in claim 19, wherein the respectively resulting pulse heights of the triggering pulse are stored in the table or characteristics diagram or characteristic curve in a manner filtered or weighted as a function of the respective value of the state variable.

21. (New) The method as recited in claim 16, wherein the state variable of the injection system is constituted by one of a rail pressure instantaneously present in the injection system, a temperature instantaneously present in the injection system, sample-to-sample variations of the injection system, or sample-to-sample variation of components of the injection system.

22. (New) The method as recited in claim 16, wherein the steps are performed only with the internal combustion engine in coasting mode.

23. (New) The method as recited in claim 16, wherein injection detection is accomplished indirectly based on operating parameters of the internal combustion engine.

24. (New) The method as recited in claim 23, wherein the injection detection is accomplished indirectly based on at least one of a rotation speed signal, a combustion chamber pressure signal, a knock signal, and an ion current signal of the internal combustion engine.

25. (New) The method as recited in claim 16, wherein the steps are performed cyclically for all combustion chambers of the internal combustion engine.

26. (New) The method as recited in claim 16, wherein the pulse height of the triggering pulse causing the injection is compared with a definable target value, and wherein a correction variable is determined from a deviation of the pulse height and the target value with which the injection system is operated in the future.

27. (New) The method as recited in claim 16, wherein the pulse duration of the triggering pulses is selected so that given a prevailing value of the state variable, an injection quantity is implemented that ensures a least possible influence on operation of the internal combustion engine.

28. (New) An apparatus for controlling an injection system of an internal combustion engine, the injection system comprising at least one injection actuator controllable by means of triggering pulses, and triggering of the injection actuator being performed based on at least one state variable of the injection system, the apparatus comprising:

- a first arrangement configured to sense the at least one state variable and to temporarily store the state variable that is sensed;

- a second arrangement configured to trigger the at least one injection actuator with a triggering pulse of definable pulse duration and definable initial pulse height;

- a third arrangement configured to perform an injection detection upon triggering the at least one injection actuator;

- a fourth arrangement configured to increment the pulse height of the triggering pulse in definable steps at the defined pulse duration; and

- a fifth arrangement configured to permanently store the pulse height of the triggering pulse causing the injection as a function of the sensed state variable, in an event an injection is detected.

29. (New) The apparatus as recited in claim 28, wherein the fifth arrangement includes a comparator by means of which a check is made as to whether the state variable is varying, in the time interval considered, within a definable variability, the pulse height of the triggering pulse causing the injection being permanently stored as a function of the sensed state variable of the injection system only if the comparator ascertains that the state variable is varying, in the time interval considered, within the definable variability.

30. (New) The apparatus as recited in claim 28, wherein the fifth arrangement includes at least one table, characteristics diagram, or characteristic curve for permanent storage of the pulse height of the triggering pulse causing the injection as a function of the sensed state variable, which height is taken as the basis, in future operation of the injection system, for triggering the at least one injection actuator.

31. (New) The apparatus as recited in claim 28, further comprising:

- a sixth arrangement configured to detect a coasting mode of the internal combustion engine.